

DIESEL OFF-ROAD EQUIPMENT MEASURE PRELIMINARY REGULATORY CONCEPTS

Purpose – ARB’s overall goals for reducing public exposure to diesel particulate matter (PM), which is a toxic air contaminant, are described in ARB’s 2000 *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. The primary purpose of this measure is to reduce diesel PM emissions from off-road equipment as much as technically and economically feasible in the short- and long-term. A secondary purpose is to reduce oxides of nitrogen (NOx) emissions as well.

Applicability – Rule would apply to any person who sells, offers for sale, leases, purchases, owns, or operates any mobile diesel-fueled off-road compression ignition equipment over 25 horsepower. Such equipment is used in construction, mining, and industrial operations. The measure will not cover locomotives, commercial marine vessels, marine engines, or recreational vehicles. The measure will also not cover stationary or portable equipment, or equipment used in agricultural operations, at ports or intermodal railyards, or already covered by another measure or agreement.

Performance Requirements –

Idling limit

Off-road compression ignition equipment owners and operators should have a policy to reduce unnecessary idling. The definition of “unnecessary idling” is to be determined.

Control Technology Requirements

Verified Diesel Emission Control System (VDECS) Failure:

For any VDECS installed pursuant to this regulation, if the VDECS fails or is damaged within its warranty period and it can not be repaired, the owner must replace it with same level VDECS. If the VDECS fails or is damaged outside of its warranty period and it cannot be repaired, the owner must replace it with highest level VDECS available for engine at time of failure.

Compliance Flexibility:

Compliance extensions may be granted for the following reasons:

- An experimental diesel particulate matter emission control strategy is in use,
- An engine is scheduled to be retired from active service within x (to be determined) years after the applicable compliance date, or
- No VDECS is commercially available for a piece of equipment, and replacing or repowering the equipment is not commercially feasible.

Compliance dates may also be delayed for small fleets (to be defined).

Requirements may also differ for low-use engines (definition of “low-use” in terms of x hours/year operation to be determined).

Newly Purchased or Leased Equipment:

Equipment newly purchased or leased on or after December 31, 2007 must meet the following requirements upon purchase or lease:

Construction equipment < 175 hp:

- No requirement at time of purchase. See in-use equipment discussion below for requirements subsequent to purchase.

Non-construction equipment and construction equipment ≥ 175 horsepower:

- Have an engine meeting the final after-treatment based Tier 4 PM standards,¹
- OR
- Have the highest level VDECS available² on each engine at time of purchase.

See in-use equipment discussion below for additional requirements subsequent to purchase.

In-Use Equipment:

- Use Best Available Control Technology (BACT) on each engine as required by the compliance schedule below:

Group	Engine Model Years	Compliance Phase-in Dates [*]			
		25%	50%	75%	100%
1	Pre-1988	2007	2008	2009	2010
2	1988-1995	2008	2009	2010	2011
3	1996-2002	2009	2010	2011	2012
4	2003-2006	2010	2011	2012	2013
5	2007-2014	Model year (MY) +4	MY+5	MY+6	MY+7

* - 25% by Dec. 31 of first year, 50% by Dec. 31 of second year, 75% by Dec. 31 of third year, 100% by Dec. 31 of fourth year

BACT is defined as follows:

¹ Final Tier 4 PM standards must be met by 2011-2013 for engines ≤ 750 hp and 2015 for engines >750 hp (except for some engines may not meet standards due to manufacturer flexibility provisions).

² Retrofit would only be required if a diesel PM control technology is verified for the engine in question, and if the engine's use pattern is appropriate for that technology (i.e., a diesel emission control strategy manufacturer or authorized dealer agrees device can be used on the specified engine without jeopardizing the original engine warranty).

- Tier 4 or equivalent: An engine or power system certified to the optional 0.01 g/bhp-hr particulate matter (PM) emission standards in Title 13, California Code of Regulations (CCR), Section 1956.8, or the final after-treatment based Tier 4 PM emission standard in Title 13, California Code of Regulations, Section 2423 (when effective)¹.

OR

- Tier 2/3 and At Least Level 2 VDECS: An engine certified to the Tier 2 or 3 off-road diesel engine standard or optional 0.1 g/bhp-hr particulate emission standard in Title 13, CCR, Section 1956.8, and used with the highest level VDECS available as of compliance date.² If the highest level VDECS is Level 1, then by Dec. 31, 2015, must either install a Level 2 or 3 VDECS³, or meet the final after-treatment based Tier 4 particulate emission standard as specified in Title 13, CCR, Section 2423 (when effective)¹.

OR

- At Least Level 2 VDECS: Installation of the highest level VDECS available as of compliance date.² If the highest level VDECS is Level 1, then by Dec. 31, 2015, must either install a Level 2 or 3 VDECS³, or meet the final after-treatment based Tier 4 particulate emission standard as specified in Title 13, CCR, Section 2423 (when effective).

OR

- Alternative fuel or heavy-duty pilot ignition engine.

OR

- Wait for VDECS or final Tier 4 engine. If no engine meeting the final after-treatment based Tier 4 PM emission standard is available for the given equipment type and application as of the compliance date, and no VDECS is available for the engine, then must either:
 - Install an engine or power system certified to the final after-treatment based Tier 4 PM emission standard within 12 months after such an engine becomes available,¹ or
 - If a VDECS becomes available for the engine (i.e., is verified), install the VDECS within 12 months. If the highest level VDECS is Level 1, then by Dec. 31, 2015, must either install a Level 2 or 3 VDECS³, or meet the final after-treatment based Tier 4 particulate emission standard as specified in Title 13, CCR, Section 2423 (when effective).¹

Sale/Rental requirements –

A person cannot knowingly offer for sale, sell, rent, or lease new or used equipment for use in California that does not meet the performance requirements.

³ Must install highest level VDECS available as of 10 months prior to Dec. 31, 2015, i.e., if both Level 2 and Level 3 VDECS are available, must install Level 3 VDECS.

Record keeping –

Owner must maintain the records listed below and provide them to an agent or employee of the Air Resources Board upon request:

- Owner/operator contact information,
- Equipment and engine information (make, model, engine family, horsepower, etc.)
- Emission control system information (type, maintenance records, records of any VDECS failure and replacement, etc.),
- Type of fuel used, and
- Operation information (application, annual hours of operation, etc.).

Reporting program –

Initial equipment reporting – As of mid-2007, for each engine subject to the off-road in-use rule, report to ARB the owner, make, model, engine family, engine serial number, model year, application, horsepower, annual hours of use, and any emission control equipment.

Annual compliance demonstration – Beginning on December 31 of the first compliance date for an owner's fleet, and annually thereafter through 2021 for each year for which the owner's fleet has a compliance date, owner must identify the control strategy implemented for each engine subject to the off-road in-use rule in order to meet the requirements of the off-road in-use rule. Owner must provide justification that no VDECS or Tier 4 engine is available for any engines meeting BACT with the "Wait for VDECS or final Tier 4 engine" option.

Technical review and status report – In 2008, ARB staff will bring Board a summary of the 2007 reporting data and a status report on what retrofit devices are verified for off-road equipment, and what we have learned regarding costs for repower and retrofit, etc.

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